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DATE: November 18, 2004

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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

AMENDMENT AFTER FINAL

APPLICANT(S): Heinrich Jürgensen CONFIRMATION NO.: 9473
SERIAL NO.: 09/445,112 GROUP ART UNIT: 2828
FILED: February 17, 2000 EXAMINER: Delma R Ruiz
TITLE: "METHOD AND ARRANGEMENT FOR REDUCING THE PUMP
LIGHT AT THE EXIT OF A FIBER LASER"

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Commissioner for Patents,
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SIR:

On October 6, 2004, Applicant's attorney conducted an interview with Examiner Ruiz. At the conclusion of that interview, the Examiner acknowledged that Applicant's arguments appeared to be correct that Shaw did not suggest the features of the patent claims since Shaw teaches complete internal reflection of the pump waves. In a following telephone conference on November 17, 2004, the Examiner requested that Applicant summarize in writing the arguments presented during the October 6, 2004, interview.

To assist the Examiner in fully understanding claim 29 during the interview, the language of claim 29 was related to the preferred embodiment of Figure 1. In making the following comparisons between claim 29 and Figure 1, of course it is recognized Figure 1 is a preferred embodiment and these arguments do not limit the application of the claims either literally or under the Doctrine of Equivalence.

As recited in the preamble of claim 29, pump light 5 is reduced in a region of the laser light exit 11. The laser resonator fiber comprises a fiber core 2 surrounded by the pump fiber

comprising an inner-fiber portion 1 surrounded by a sheath 3. At a light entrance end 4 of the pump fiber, the pump light 5 is input so that laser light arises in the fiber core 2 and exits from the fiber core 2 at the laser light exit 11 as the narrow laser beam 8.

At a last section B,A before the laser light exit 11, substantial remaining pump light is allowed to escape from the pump fiber. This is represented by the arrows at the right side of Figure 1 where some of the pump light is escaping from the removed portion of the sheath and also where the sheath is completely removed. Significantly, this reduces pump light from being emitted with the laser light 8 at the laser light exit 11, as recited in claim 29, by removing at least a portion of the sheath at the last section B,A. As a consequence, there is much less pump light emitted with the laser light 8. Thus the problems discussed at p. 2 first full paragraph of Applicant's specification are substantially avoided.

The Examiner rejected claim 29 under 35 U.S.C. §102 as anticipated by Shaw. However, as was carefully explained during the interview, Shaw cannot anticipate the language of claim 29 for the following reasons. If one compares the Figure 1 diagram of Shaw to Figure 1 of the present application, the following is noted. In Figure 1 of Shaw the pump light is entering at input face 22 from pump sources 24. The pump light is shown as ray 26 reflecting off the pump fiber/air interface based on the index of refraction at that point.

At column 5 of lines 23-33 Shaw explains that the refractive index of the material surrounding the jacket 14 is less than the refractive index of the jacket 14. In the example of Figure 1 the refractive index is formed by air, although a secondary cladding may surround the jacket 14 to further reduce losses.

In Shaw Figure 1 the laser light exits from the fiber core 30 at the right side.

Very significantly, Shaw thus teaches that it is desired that loss of the pump light at the interface between jacket 14 and the air is to be minimized and indeed teaches adding another sheath on top of the pump fiber 14 to further reduce any loss of pump light. This is a direct contrary teaching to claim 29 which teaches the exact opposite. Claim 29 teaches that a sheath

surrounding the pump fiber is to be at least partially removed at the light exit to permit pump light to escape. Shaw teaches directly away from this by indicating that a sheath should be added on top of the shaped jacket 14 (pump fiber) to reduce light loss.

Furthermore, it is the pump fiber in which the pump light is traveling, and not a sheath covering the pump fiber, which is narrowed in Shaw. To the contrary, in claim 29 it is not the pump fiber which is narrowed but it is the sheath on top of the pump fiber which is at least partly or completely removed to allow the escape of pump light near the laser light exit. Shaw only teaches putting a sheath on the pump fiber (which he calls a jacket 14) to reduce light, but nowhere teaches that such a sheath on top of the pump fiber 14 would be narrowed or removed near the laser light exit at 29.

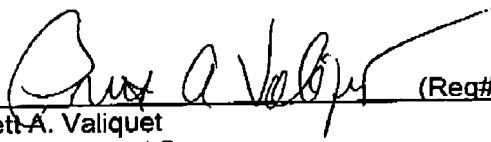
In conclusion, Shaw's narrowing of his pump fiber has absolutely nothing to do with partly or completely removing a portion of a sheath covering pump fiber near the light exit.

For all of the above reasons, claim 29 clearly recites structure which readily and clearly distinguishes in a number of different ways over Shaw as explained above.

Dependent claims 30-35 distinguish at least for the reasons claim 29 distinguishes. Also, independent claim 36 distinguishes in the manner described above for claim 29. Similarly, dependent claims 37 and 39 are allowable for the same reasons claim 36 is allowable.


Allowance of the case is respectfully requested.

Respectfully submitted,

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